



## ICELANDIC SKETCHES.



THE TREHYRNING, OR THREE-HORNED MOUNTAIN.

### 1. GEOGRAPHICAL SKETCH.

WE are accustomed to invest the arctic regions with the terrors of perpetual winter, and to suppose that the character of the inhabitants necessarily partakes of the sternness of their climate. But amid those tracts of snow and mountains of ice, all is not desolation: a closer inspection reveals softer features, and proves that even there a kind overruling Providence has assigned to the animal and the vegetable kingdoms their periods of enjoyment and fertility; and has enabled man not only to endure the clime, but to share in its peculiar enjoyments and greatly to mitigate its terrors.

The land to which we are about to invite attention, presents some of the wildest and grandest phenomena of nature together with gentler scenes which become more beautiful by contrast. The inhabitants, too, present some of the gloomy characters of their country, relieved by many of those Christian virtues which happily spring up to adorn and to bless every region of the earth where true religion is known. Even in a country which we might be apt to fear was doomed to a spiritual darkness commensurate with its natural gloom, numbers are encouraged through the merits of a redeeming Saviour, to look forward to a brighter home than the most favoured spot in this world can afford.

Iceland is a large island situated in the North Atlantic Ocean, between  $13^{\circ} 2'$  and  $24^{\circ} 31'$  of west longitude, and between  $63^{\circ} 23'$  and  $66^{\circ} 33'$  of north latitude. Its most northern point scarcely touches the arctic circle, whilst the North Cape, usually placed in maps to the north of this line, does not touch it. Its shape resembles somewhat that of a heart, the point of which

is towards the south. Its area is estimated at 38,320 square miles, but only about a ninth part is inhabited, the rest being occupied with naked mountains of ice, or by lava and volcanic ashes and sand.

The aspect of Iceland is most repulsive. Its dark and rugged coasts frequently present lofty precipices which repel the advances of the ocean; but where the rocks are rent asunder, long narrow fiords, or inlets of the sea, are formed, in whose calm waters a safe retreat from a stormy ocean is often afforded to the mariner. The western coast is deeply indented with these fiords. The southern coast alone is flat and sandy; but here occur numerous shoals, quicksands and breakers, which expose the fishermen to danger, and often render it impossible to land in safety. Many parts of the shore are occupied by long banks of sand, some of which are nearly two miles broad, and in other places numerous rocks defend it from the action of the waves.

As the traveller approaches Iceland, his attention is arrested, long before the coast is seen, by certain white specks in the horizon: these are the Jökuls, or snowy mountains. Sneefeld, one of these, is seen from a distance of 140 miles, and Sniofell from 100 miles. On a nearer approach, these mountains present themselves to the eye as colossal piles of perennial snow, and when reflecting the beams of a bright sun they shine forth with dazzling lustre, and tinge the atmosphere with a golden hue. The production of these jökuls is similar to that of the glaciers of the Alps and Pyrenees, but the low temperature and abundant moisture of Iceland, are more favourable to their increase. The rounded forms of the trachyte mountains allow vast quantities of snow to rest on their tops and sides. The summer's sun

melts the outer portion, and the water thus formed sinks far below the surface, where it is immediately converted into ice. Fogs and mists are attracted towards these mountains, and, condensed upon their summits, increase and consolidate the mass. Its smooth shining surface reflects the rays of the sun, so that but little heat is absorbed, and if during the day a portion of the snow is dissolved, it freezes again at night. One consequence of this alternate thawing and freezing is the production of *rotten ice*, which not offering sufficient resistance to the accumulating snows of many winters, the whole mass slides down into the valley and lays waste the narrow fields and scanty pastures of the natives. It is related that the Iclander who has returned after years of absence in a foreign land to end his days in the home of his childhood, may find it transformed into a desolate wilderness of ice. The volcanic fires which lurk within many of these jökuls also hasten the catastrophe by destroying the slight hold the ice has on the mountain, and, converting the under stratum into water, float the whole mass down into the valley. In this way seems to have been formed the Breidamark Jökul, which is now twenty miles long by fifteen broad, and four hundred feet high. It occupies a wide plain encompassed by hills, which several centuries ago was a beautiful vale adorned grass-fields, woods, and farms. Most of these ice-mountains occur in chains extending across the island, and exert a powerful influence both on its civil and physical character. The Klofa Jökul is said to cover a space of 3000 square miles, and to be still encroaching on the land which separates them from the coast. It is even feared that the present narrow and dangerous path, which forms the only road between East and South Iceland will soon be obliterated. The chain is prolonged towards the west by a continuous plateau of ice, and terminates near the coast with the Oester Jökul. Many of the summits of this range greatly exceed 5000 feet in elevation, and form conspicuous land-marks to travellers approaching Iceland from the south at a distance of nearly one hundred miles. Other mountain chains of this description occur in various parts of the island, and stamp it with the character of barren desolation. Most of these rocky masses are of volcanic origin, as has often been fearfully proved by the concealed fire bursting forth with fury through the icy covering which concealed its terrors.

The snowy chains of Jökuls inclose the great desert of Iceland, "whose unknown regions form the scene of many superstitious terrors to the natives; and indeed, the lonely and desolate aspect of this district can scarcely be exceeded by any other region on the earth. Age after age, volcano on volcano have poured their stony floods over its surface, till it has become almost one black scarified field. Immense masses torn from the neighbouring mountains, and wide chasms, everywhere interrupt the progress of the traveller, whilst the magnetic influence of the rocks renders the compass useless as a guide. Long tracts of volcanic sand, interspersed with huge insulated fragments of lava, can scarcely be said to diversify the scene. In these wastes no springs of water refresh the traveller, who, as in the deserts of Arabia, must carry a supply along with him. No bird, no beast, scarcely even a plant or humble moss relieves the tedium of the journey, or expels the feeling of loneliness that weighs upon his spirit. Where the internal fires have been most active, hills are tossed on hills in inextricable confusion, of which even the tempestuous ocean furnishes but a faint image. In other quarters magnificent glaciers of green transparent ice occur, whilst the volcanic scoræ with which they are often mixed, exhibit a strange contrast, though one strikingly characteristic of this land, where fire and ice seem ever conjoined, and, yet ever contending for the mastery\*."

\* From a skilfully compiled article on Iceland, contained in a recent volume of the *Edinburgh Cabinet Library*.

Of the numerous volcanic cones of this island, that of Hekla is most familiar, on account of its position near the most frequented part of the island and in sight of vessels sailing to Greenland and North America; as also the frequency of its eruptions and the ease with which it can be approached. Its height has been computed at 5110 feet, and its circumference at the base between fifteen and twenty miles. It stands alone in the midst of a valley, and is about thirty miles from the southern coast. It consists chiefly of lava and scoræ mixed with ashes, pumice, and partially fused stones emitted by the fiery streams of numerous eruptions. It is divided near the top into three peaks, in the sides of which craters are formed. Mackenzie, in 1810, found steam issuing from the central peak, and the heat to be so great that on removing some of the exterior stones, those below were too hot to be handled. Its sides are marked by numerous ravines which discharge the winter cataracts, and seem to have been occasioned either by molten lava, or by the torrents of water or melted snow which often accompany an eruption. The fertile plain which once surrounded this volcano is now buried beneath the desolating streams which it has from time to time poured forth: for nearly ten miles around no vegetation is to be seen, but only the ruined walls of numerous farm-houses which tell a mournful tale of peace and prosperity for ever departed.

Although Hekla is better known than most of the other Icelandic mountains, yet it is said to be by no means equal in picturesque appearance to the Trehyrning or Three-Horned Mountain, situated near it, and represented in our frontispiece, from a sketch by M. Gaimard. The height of this mountain is only 2860 feet.

In some of the plains surrounding Krabla, and other burning mountains in the north of the island, and sometimes on the mountains themselves, are many fens containing boiling pits of sulphur and mud. Olafsen describes one which had the form of a huge kettle filled to within thirty feet of the brim with viscid bluish water, visible only when the wind wafted aside the dense vapour that ascended from the surface, and threw an acid mud on the banks. Another of these strange caldrons, described by Henderson, was about 700 feet below the summit of the mountain. Its circumference measured about 300 feet, and it contained a mixture of water, sulphur, and bluish-black mud, in a state of constant ebullition, and every few minutes casting up a jet from the centre. This rose at first to a height of about twelve feet, increasing by jerks to thirty feet, when it quickly declined, and was succeeded by a smaller jet from another part of the pool. The sides, composed of red earth and sulphur, were so soft that it was dangerous to approach the margin. This traveller speaks of the horrors of this pool as being absolutely indescribable; and says that the awful impression they left upon his mind can never be erased. Sometimes a narrow tract covered with grass, has tempted man to take up his abode near the scene of these terrible operations: the internal fires growing fiercer and fiercer, the contents of the caldrons have boiled over, and consumed and corroded every green thing they touched.

If during their periods of repose the numerous volcanic mountains of Iceland are objects of high interest to the traveller, how intensely painful does that interest become when they are aroused from the torpor perhaps of centuries, and discharge their magnificent artillery over the devoted land around them. We have numerous records of these eruptions, every one of which is a tale of terror; but our space will not allow us to do more than refer briefly to the eruption of the Skaptar Jökul, in 1783\*.

The winter preceding this year had been unusually mild, but nothing seemed to foretell approaching danger,

\* A detailed account of this, as well as several other eruptions, will be found in the volume already named.

till towards the end of May, when a light bluish fog was seen floating along the ground, succeeded in the early part of June by earthquakes, which increased daily in violence till the 8th of that month. At nine on the morning of that day, numerous pillars of smoke were seen rising in the hill-country towards the north, which, gradually gathering into a dark mass, obscured the air, and proceeding southerly, against the wind, involved the district of Sida in darkness, showering sand and ashes to the thickness of an inch. This cloud continued to increase till the 10th, when fire-spouts were observed in the mountains accompanied by earthquakes. Next day the large river Skaptaa totally disappeared. On the 12th, a huge current of lava burst from one side of the volcano, and rushed with a loud crashing noise down the channel of the river, which it not only filled, but overflowed, though in many places from 400 to 600 feet deep, and 200 broad. The devastating progress of the fiery stream over the low country was, for a few days, intercepted by a lake, but the basin was at length filled, and the burning flood proceeded onwards in two directions: one to the east, where its progress was for a short time interrupted by the Skalfiall, up which, however, the stream forced its way, rolling the mossy covering of the mountain before it like a large piece of cloth. The other current proceeded southward, passing over some old lava which again began to burn. Rivers were made to boil, and these destroyed many spots which the fire had spared. Here the liquid matter continued to flow till the 20th of July, and, following chiefly the course of the Skaptaa, it at length poured over the lofty cataract of Stapafoss, and filled up the enormous cavity below. During the whole of this eruption the air was filled with noxious vapours, or darkened with clouds of ashes, by which the sun was either concealed from the miserable inhabitants, or appeared like a blood-red globe which increased their terror and dismay.

The fury of this volcanic storm had been so long confined to the Skaptaa, that the inhabitants of the eastern district on the Hverfisflist, though greatly incommoded by showers of ashes, hoped to escape its more immediate visitations. But on the 28th of June a cloud of sand and smoke caused so thick a darkness that objects within doors could not be distinguished; whilst red-hot stones and dust burned up the pastures, poisoned the waters, and threatened to set fire to the dwellings. On the 3rd of August, a thick vapour arose from the Hverfisflist, its waters entirely disappeared, and on the 9th a foaming fire-stream rushed furiously down its bed, overflowing the country in one night to the extent of more than four miles. The eruptions continued till the end of August, when the whole catastrophe closed with a violent earthquake.

The destructive effects of this volcano were not confined to its immediate vicinity: vast quantities of sand and ashes were scattered over the remoter parts of the island, and some were conveyed to the Faroe Islands, a distance of nearly 300 miles. The noxious vapours that for many months infected the air were equally pernicious to man and beast, and covered the whole island with a dense fog, which obscured the sun, and was perceptible even in England and Holland. The steam rising from the crater, or exhaled from the boiling waters, was condensed in the cooler regions of the atmosphere, and descended in floods that deluged the fields and consolidated the ashes into a thick black crust. A fall of snow in the middle of June, and frequent showers of hailstones of unusual magnitude, accompanied with tremendous thunder-storms, tearing up huge fragments of rock, and rolling them down into the plains, completed the scene of desolation. The grass and other plants withered, and became so brittle that the weight of a man's foot reduced them to powder; and even where the pastures seemed to have recovered, the cattle refused to touch them, dying of actual starvation in the midst of

most luxuriant herbage. Small unknown insects covered many of the fields, whilst other portions of the soil, formerly the most fertile, were changed by the ashes into marshy wastes, overgrown with moss and equisetæ. A disease, resembling scurvy in its most malignant type, attacked both men and cattle, occasioned in the former, no doubt, by the scarcity of food, and the miserable, often disgusting, nature of that which alone they could obtain. Many ate of the bodies of those animals which had perished from hunger or disease, whilst others had recourse to boiled skins, or substances still more nauseous and unwholesome. The numerous earthquakes, with the ashes and other matter thrown into the sea, caused the fish to desert many parts of the coast, whilst the fishermen seldom daring to leave the land, enveloped in thick clouds during most of the summer, were thus deprived of their usual stock of winter provisions. This frightful catalogue of evils occasioned the loss of 1300 human beings, 19,488 horses, 6801 horned cattle, and 129,937 sheep. This is the most moderate calculation. Stephenson, who wrote an account of the eruption, gives much higher numbers, which however are thought to be exaggerated.

### ANAMORPHOSES.

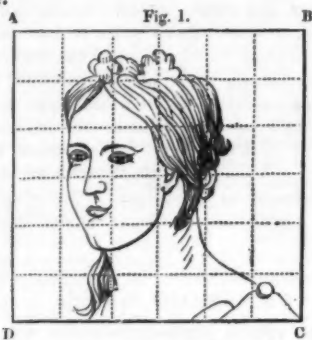
AMONG those optical phenomena which are calculated to deceive, when considered by the aid of the eye only, there is one of a very curious kind called *Anamorphosis*, a term derived from two Greek words signify a distortion of figure. The phenomenon consists in this, that a distorted and grotesque figure, out of all regular proportion when viewed in a customary way, shall become symmetrical and regular when viewed from a particular point. We shall select one example, and illustrate by its means how such optical puzzles may be produced geometrically.

Take any subject at pleasure, say a portrait of a female head, as in fig. 1; and of small size. Divide it vertically and horizontally with parallel lines, of which the outer shall all form the boundary  $A B C D$ , and the whole shall be equidistant. Then, on a separate piece of paper or cardboard, prepare a drawing similar to fig. 2, by the following means. Draw a horizontal line  $a b$ , equal to  $A B$ , and divide it into as many equal parts as the latter is divided. Let fall a perpendicular line  $e v$ , from the middle of  $a b$ , and then draw  $s v$  parallel to  $a b$ . Both  $e v$  and  $s v$  may be any length at pleasure; but the longer the first is, and the shorter the other, so will the anamorphosis be more and more deformed; the proportions in our figures are sufficiently different.

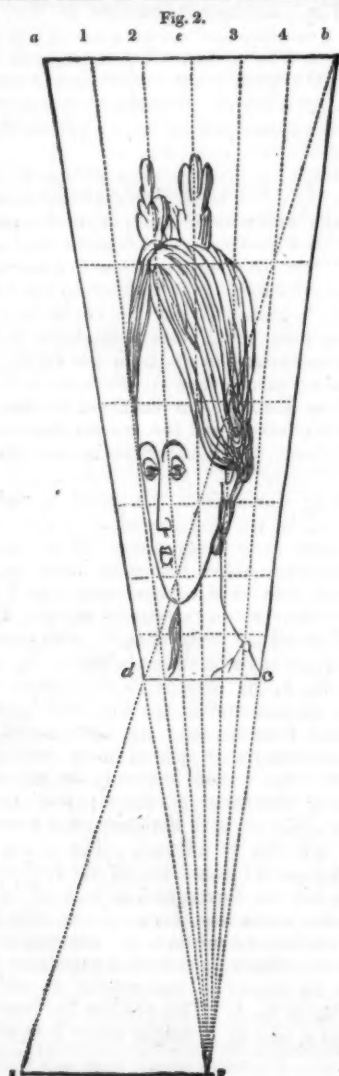
After having drawn from the point  $v$ , right lines  $v 1, v 2, v 3, v 4$ , to the divisions of  $a b$ , draw the line  $s b$ , and through each point where  $s b$  intersects the divergent lines, draw other horizontal lines parallel to  $a b$ . We shall thus have a *trapezium*,  $a b c d$ , divided into as many cells as the square in fig. 1. The next step is, to fill up all the cells of fig. 2, with portions of the device proportionate to their position in fig. 1. For instance, in fig. 1, the nose is in the second vertical division from the left, and in the third and fourth horizontal divisions from the top; and that portion of the face must accordingly be placed in a corresponding part of fig. 2. But it will obviously be necessary to introduce great distortion of figure; and the more numerous the divisions, both horizontal and vertical, the more readily will this be effected. The easiest way is, to make the points of intersection, of the horizontal and vertical lines, fall on corresponding parts of the face in the figures; after which the other portions can be filled in.

By these means we procure the anamorphosis seen in fig. 2, which, when viewed from a particular position, will lose all its distortion, and assume an appearance resembling that in fig. 1. This position lies immediately over the point  $v$ , and at a height above it equal to the

length of the line  $sv$ ; and the means of determining it are as follow. Place the drawing horizontally before a window; take a slip of card, and rest its lower edge on the line  $sv$ , the card being accurately vertical; pierce a small hole in the card vertically over the point  $v$ , and at a height from it equal to the length of the line  $sv$ ; then, with the eye placed immediately behind the card, look through the orifice at the anamorphosis. It will be found that, as soon as the eye has become accustomed to the novelty of the experiment, the anamorphosis will lose its distortion, and appear almost exactly like the symmetrical figure.



It would be extremely difficult, and would require geometrical reasoning of a lengthened kind, to shew why this particular form of construction should lead to such



and such results. Perhaps the idea may better be caught by selecting a *mechanical* form of trying the experiment, a form, indeed, which may in many cases be the most easy to a young experimentalist. Having selected a design on paper, pierce it by means of a needle or pin with a number of small holes, at the principal points of its circumference and interior details. Then, holding this drawing in a vertical position over a flat sheet of paper and placing a candle at a short distance behind it, the rays of light which pass through the holes will fall upon the surface which is to receive the anamorphosis, and will there mark certain points of the device, which may be afterwards filled up by the pencil. Then, the eye being placed at the point previously occupied by the flame of the candle, we shall see this figure under a very regular form, although it would appear grotesque and misshapen to an eye placed anywhere else.

This last-mentioned mode of performing the experiment is very instructive, in reference to the cause of the deception. We have supposed the design to be vertical, the anamorphosis horizontal, and both to be formed of plane flat surfaces. The candle, too, we have supposed to be placed near the design, and elevated a little above it. But all these conditions may be varied *ad libitum*. The design may be either vertical or inclined; the paper on which the anamorphosis is to be formed may be either horizontal or inclined; the surface of the paper may be either plane or curved; the candle may be more or less elevated above the design, and more or less distant from it. All these variations in the conditions of the experiment produce variations in the appearance of the anamorphosis; and yet all suffice to give to the anamorphosis a regular form, when the eye is placed in the position previously occupied by the flame of the candle. This is in fact the distinguishing principle of the experiment.

In general, such subjects are chosen, and the degree of distortion is such, as will produce a figure utterly unintelligible when seen in the common way by a person unused to the experiment. Some artists have even succeeded in giving to the anamorphosis an appearance of an image which becomes changed into another totally different when seen from a particular point of view. Thus Nicéron made a drawing which, when viewed in the customary manner, represented a rural landscape; but when viewed from a particular point of sight, it totally changed its character, and gave a representation of two men upon the walls of a cloister.

There is a kind of anamorphosis sometimes found at the opticians, which, though nothing more than a toy, is very curious in reference to our present subject. A conical mirror is placed upon its base on a sheet of paper, which is marked with certain confused lines. When the eye is placed in one definite spot, and views this design as reflected in the surface of the mirror, the confused lines become combined or congregated so as to form a regular figure. The construction of such an anamorphosis is a very ingenious application of the optical law, that in reflected light the "angle of incidence is equal to the angle of reflexion;" and although we cannot here follow out the method to its minute details, we may offer a few explanations. In the first place, a design is prepared on a piece of paper, and is inclosed in a circular boundary. The circle is then divided into equal segments by radii proceeding from the centre to the circumference; and these segments are further divided by concentric circles, drawn equidistant one within another. The surface of the design is thus divided into several curved portions; and the more numerous these portions are, the more correctly can the anamorphosis be made. This design, thus divided, forms the pattern from which the drawing of the anamorphosis is to be effected; but before this can be done, a sheet of paper must be marked with lines in a peculiar manner. This is an intricate part of the business; for the object is, to arrange

circles and lines in such a manner, that when a conical mirror is placed on the paper, and the eye placed above it, in the prolongation of the axis, the reflexion of all these lines shall together form a figure similar to that of the circles and radii of the original design. A great many circumstances have to be taken into account here; such as the diameter of the cone; the proportion between its diameter and its height; the obliquity of its sides; the height of the eye above the apex. All these matters are to be expressed geometrically on paper, and the requisite lines and circles deduced from them. The anamorphosis, or rather the chart on which it is to be formed, consists of concentric circles and radii, as in the original pattern, though of different proportions; and the experimenter then proceeds to work in the design. This is a task of some difficulty; for that portion of the device which was represented in the centre of the pattern, must be placed at the outer circumference of the anamorphosis: while the exterior portions of the device in the pattern are copied in or rather near the central part of the anamorphosis. A space is left in the middle, on which the base of the conical mirror is to be placed; and the eye being then held in a given position above the apex of the cone, sees a regular and symmetrical figure reflected from the surface of the mirror. In order to prevent the eye from wandering to an unsuitable position, it is desirable to view the mirror through a perforated card, held horizontally at the proper distance above the apex of the cone.

These optical illusions greatly surprise those who are not familiar with their nature and causes, on account of the want of resemblance between the anamorphosis, and the figure represented. A still more remarkable effect is produced when the mirror is *pyramidal* instead of *conical*, for in that case only a portion of the device drawn on the sheet of paper can be reflected to an eye above the apex. All those rays which fall on the angles of the pyramid, or on any of the sides in other than vertical planes, are not reflected to the eye, and do not form part of the compounded image. Consequently, we may fill up these portions of the sheet of paper with any grotesque device we please, provided correct drawing be bestowed on those parts which are reflected to the eye, and the anamorphosis is then such as to baffle all the speculations of an uninitiated spectator.

In these optical illusions, if the devices be coloured, as they ought to be to produce the most striking effect, some tact is required in proportioning the depth of tint, so that the reflected tints, whether coming from a near or a remote part of the drawing, may have a due intensity.

### THE BRANDY PEST,

A TALE; TRANSLATED FROM THE GERMAN OF HENRY ZSCHOKKE, BY L. GANTNER.

THE following tale is from the pen of a writer who has devoted his whole life to the welfare of his fellow creatures. HENRY ZSCHOKKE is not only acknowledged as one of the most distinguished novelists and historians of Germany, but also as one of her most active statesmen and philanthropists. Almost all his writings tend to improve the moral condition of the people. He thinks it not degrading to address even the lowest classes, in that simple and unaffected style, which alone can speak to their hearts and awaken in them those higher mental feelings, which but too commonly are kept down by their miserable condition. Even in his most classical works, such as his famous *History of Switzerland*, which has been translated into several languages, he keeps the people constantly in view. Possessing not only a high reputation as a classical writer, but also great power as a statesman, he stands in a position in which his Christian philanthropy finds full scope for activity. Watching for half a century the evils that have crept upon society, he could not but see that their main source was drunkenness. In vain had he endeavoured to improve the moral character of the Swiss, which has been of late much degraded through the increasing intercourse with foreigners, by holding before them the high examples of their sober, brave, and virtuous forefathers, or by showing, as he had done in a popular little work called *The Village of the Gold-makers*, (translated some years ago into English,) how to obtain real prosperity. But

his efforts were of no avail with a people stupefied by the immoderate use of ardent spirits. He resolved therefore to attack the main evil, and after having carefully considered the attempts that have been made in England and America, for rescuing the unfortunate victims of drunkenness from ruin, he wrote the *Brandy Pest*, and had it distributed widely among the poor, with a view not only of opening the eyes of the blind and ignorant, but also of stimulating all good Christians to assist in the eradication of a wide-spread disease.

The tale produced the intended effect. The sensation it created was extraordinary. The advice given in it was widely adopted; and Zschokke has been amply rewarded by witnessing the gradual moral improvement of thousands, arising from the formation of temperance societies, and the zealous assistance of many clergymen, magistrates, and other benevolent men.

Although in this country much has been done to eradicate the evil of drunkenness, yet the following little tale will be found neither superfluous nor unworthy of the attention of all classes, as it is intended "to instruct and warn the rich and the poor, the old and the young," of this country as well as of that for which it is especially written. The character, talents, rank, and almost European name of its author, as well as the circumstance of its being entirely free from party spirit, will doubtless justify the present translation.

With regard to the title, it must be borne in mind that in Switzerland *brandy* is the cheapest spirit, and consequently that liquor of which there is the greatest consumption. It is in fact the *gin* of the Swiss. The corresponding English title or the little book would therefore be, *THE GIN PEST*. But having no wish to alter anything in the locality of the tale, nor to modify it so as to represent the state of drunkenness in this country, the translator has kept strictly to the subject-matter of the original, and retained even the peculiarly simple construction of the sentences; preserving thus a true and faithful picture of a Swiss story as related by Henry Zschokke.

The translation of this tale is certainly little calculated to display the great skill and talent which Zschokke possesses as one of Germany's best novel-writers, and to induce the English to make themselves more acquainted with his works; but if the author of *Waverley* is not less great because he wrote the *Tales of a Grandfather*, Zschokke's reputation may not be injured by his *Brandy Pest* and *Village of the Gold-makers*; works which he wrote, not to increase his fame as a novelist, but to contribute to the happiness of mankind.

### The Fellow Traveller.

ON my journey homeward from England, I made the acquaintance of a gentleman whom I met with at an inn. He was handsome in his personal appearance, and refined in his manners, but he was evidently depressed in spirits, and he spoke but little. When, however, he learned that I was a native of Switzerland, he took me warmly by the hand, called me his fellow-countryman, and offered me a seat in his carriage for the remainder of the journey. I accepted his offer with pleasure.

He informed me that his name was Fridolin Walter, and that he was a physician. He had, during the last four years, been travelling with a rich nobleman through the greater part of Europe, and the good lord had conferred on him a handsome pension for life, in acknowledgment of his skill and attention during an alarming illness in a foreign country, to which under Providence his lordship attributed not only his own but his daughter's recovery. "As you succeeded so well in these cases, doctor," said I, "you can perhaps give me some good advice, for I suffer dreadfully from indigestion and violent pains in the stomach." Looking at me firmly for a while, as if he would pierce me through with his black eyes, he said drily, "You may become much worse, friend." "You alarm me," I exclaimed; "I know not the cause of my complaint." "But I have discovered it," he answered, "during the few days that we have travelled together. The spirits which you take are the cause of it, although you do not drink what you call much; that is to say, you take in the morning before breakfast a glass of rum, after dinner a glass of cherry-brandy with your coffee, and in the evening another for your sleeping-draught."

"Oh, you are joking, doctor," replied I; "a glass of good spirits, now and then, can do me no harm, for I am accustomed to live simply. It gives me ease, strengthens and warms my stomach, excites my spirits, and everything goes on ten times better, after I have taken it. I declare to you, the whole earth looks much merrier after a moderate dram than before."

"You are quite right," answered the doctor, "such are always the *first* effects of spirits, and that is why people are so fond of dram-drinking; the *second* effect, however, is not so good. It makes you afterwards sleepy, weak, and nervous;

it decomposes the blood; the body becomes more susceptible of fever and epidemic diseases; and when you have any slight attack even of cold, you are exposed to greater dangers than persons who never take inflammatory beverages."

"Oh, oh, doctor! you must not exaggerate," said I; "what you have stated may be the case with drunkards."

"I do not exaggerate, friend," replied he, "it is already your case. May it in mercy happen, that the cholera come not near you, for you would in all probability fall a victim to it. In London seven-eighths of the cholera patients died, all of whom,—in the higher as well as in the lower classes,—were in the habit of drinking intoxicating liquors. You may be sure, for experience has proved it, that out of ten young men who, from their twentieth to their thirtieth year, drank every day no more than one or two glasses of spirits, more than half died at the end of ten years, and the others impaired their health before the expiration of that time."

"But, dear doctor," said I, "there are not only drinkers, but even drunkards, who become old and gray, in spite of their drinking."

"True," replied the impenetrable doctor, "but how often do we see those old transgressors, who have lost not only their best bodily strength, but also their intellectual powers. Observe their confused, staring look, and the trembling of their hands! Such persons may form an exception from those who die early, but no exception from the consequences of their vice. Their children, even, pay the penalty from which the drunken father perhaps escapes. Observe the drunkard's children! They are weak, pale, and paralytic; they are affected with glandular swellings, and have other bodily infirmities. They imitate their fathers in brandy-drinking, and die even on the very verge of manhood."

"Yes, yes," said I, "you are certainly right, I know such persons; but you must distinguish between *use* and *abuse*."

"Certainly, friend," answered he; "the use of spirits is more frequent than what you are pleased to call the abuse; nevertheless, both exercise their noxious effect on the human body, as you may observe already with yourself. *Brandy is poison under any circumstances!* Remember that! It is no beverage for quenching, but, on the contrary, increases thirst. It affords no nourishment, for it possesses no nutritious qualities; but, on the contrary, it weakens the stomach. Therefore, brandy, which is of no use for preserving health, always undermines it. The faces even of the brandy-drinkers betray their habit. Those of the lower classes, who drink nothing but brandy made from corn, potatoes, or rice, have a pale, disagreeable, weak countenance. Wealthier persons, who use cherry brandy, French brandy, foreign liquors, strong wines, and spirits, have a reddish, swollen, copper-coloured face. God marks the sinners!"

"Doctor," said I, "you put me in pain. I think it is only the *abuse* of wine and spirits which is hurtful."

"Sir," exclaimed the doctor, "*alcohol* is a slow poison, whatever may be the disguise in which it is conveyed into the system. With one or two glasses of pure alcohol one may kill a healthy man, who has never tasted spirits in his life. Mixed with other ingredients, the alcohol produces diseases in the body. Wine and beer, drunk moderately, are less hurtful than brandy, because they contain less alcohol. In a hundred gallons of beer there are only one or two gallons of alcohol; in a hundred gallons of the common fruit-wines, there are from four to eight gallons of alcohol; in good French wines, from ten to nineteen; in Spanish and Portuguese, from nineteen to twenty-five; in brandy, cherry-brandy, and rum, there are from twenty-four to fifty-three gallons of alcohol! Such is the difference."

"You really believe then, doctor, the alcohol to be the mischievous thing, the poison? But is it not used as a medicine?"

"Certainly; and so are mineral poisons; they are used as *medicines*, but not as *nourishment*, not for daily use. Alcohol is, and remains poison, like mercury; and is repelled and rejected from all the interior parts, which it affects like mercury."

"Don't tell me of alcohol and mercury," exclaimed I; "what do you advise me to do for my health? I must drink something; will you prescribe something for me?"

"Nothing," said the unmerciful doctor; "you may drink wine and beer in moderation, but good pure water will be better for you. In order to establish your health, take every morning before breakfast two glasses of fresh water, and as much in the evening before you go to bed, and do

this every day. Drink no spirits; whatever be their name, all are artificial, not natural drinks. I promise you, friend, in six months, you will have again a healthy stomach, and you will feel the best effects arise from this habit. I entreat you to follow my advice. Our ancestors were stronger people than we are; they did not drink brandy, for they were not acquainted with it. In the apothecary's shop it was found under the name of *aqua vite*, that is, *water of life*. It was used as a cordial. The savages in America call it *mad water*, and the savages are right!"

I paid attention to what Doctor Walter truly said; and for the encouragement of all the thousands who complain of diseases like mine, I add, that from that day I followed the doctor's advice, took every morning and every evening two glasses of fresh water, and only at dinner a little beer or wine. In six months' time I felt, to my great delight, the good effect of this upon my health; have since banished spirits from my house, and entirely avoided them, and during the three years following wanted no doctor.

### Two Sad Letters.

FRIDOLIN and I became daily more familiar with each other on our journey. He was a very good-hearted fellow. His sadness, however, remained unchanged; nothing could remove it, though he appeared to me too virtuous to be the victim of a guilty conscience. With the wealth he had acquired, in the fulness of health and the freshness of life, what could weigh so heavily upon his heart? No doubt, thought I, as I had already learned that he was unmarried, he has met with some disappointment in love in England.

One day, as we sat together in the carriage, and traversed a very beautiful country, I reproached him in a friendly manner for his melancholy. "You ought to be the happiest man beneath the sun," said I; "open your heart to me, perhaps I may in turn become your physician."

"That you never will," answered he, with a suppressed sigh. "I am unhappy! nobody can cure me. But I can make you acquainted with the cause of my grief. Perhaps it will relieve me, at least, to speak of misfortunes to a sympathizing friend. There, read for yourself the circumstances that call me home so quickly." He took out a pocket-book and gave me two papers from it. One of them was a letter from his mother, in the following words:

"When you receive this letter, my dear Fridolin, you will know that I am a bereaved widow. Come back, dear son, to be the support of your unhappy mother. Your father is no more. A fit of apoplexy has snatched him away from this earth. He had been attacked previously, in the autumn of last year, but I did not write to you anything about it, lest you might be in anxiety. In vain the physician recommended to him moderation in drinking. Unfortunately he had addicted himself too much to the drinking of wine and spirits. It became his and our bane. But God's will be done! I have had great domestic troubles these two years, for I have seen how our fortune has been diminishing more and more. Our small property is deeply mortgaged; probably nothing can be saved except my dowry. I fear our house must be sold. Therefore, come back immediately; you are my only consolation."

"Prepare yourself for another hard stroke of fate. A dreadful event took place six weeks ago in the house of our neighbour Thaly—more dreadful even than our own misfortune. Thaly is no more. His daughter Justine, whom you loved so much, has disappeared; nobody knows whither she has gone. All inquiries have been fruitless. Old Thaly has acted shamefully; he has deceived many people—ourselves among the number. His property is not sufficient to pay his debts. I pity the poor girl. Dear Fridolin, come immediately; leave everything in order to comfort

"Your much afflicted MOTHER."

The other letter was also written in a female hand, but without date and place. The contents of it were as follow:

"Be not frightened, my ever-beloved Fridolin, if I tell you, that this is the last letter you will receive from me. It is true, I am still attached to you with all my heart, but I can never be your bride, though it will break my heart to lose you. I am glad that your parents opposed our union, for I have experienced the most horrible blow that can be conceived; I cannot write it to you. You will learn it but too soon. Forget me! I discharge you from all your promises. I shall return into the hand of your mother the ring you gave me. Give it to some happier being who is more worthy of you. I live and suffer, far from your and my home. Brought up in wealth, I am now a servant."

For me the world has no more joy—all is gloom and death for me.

"Farewell, dear, beloved Fridolin! forget me! I have now accomplished the most difficult thing, I have now bid you farewell for ever and ever. Do forget me! Do not inquire for my residence. I have a great desire to die; perhaps death may soon relieve me. Farewell! Farewell!"

JUSTINE."

### An Unhappy Man.

WHEN I had read these letters, I was for a long time in great emotion. I felt deeply that two such communications were sufficient to drive to madness a young man who had a heart like that of my friend. Now I understood his horror of strong liquors; they had killed his father, and ruined a great part of his fortune. The letter of Justine Thaly, however, made the greatest impression on me; it indicated a terrible secret, which the unhappy creature had not even the courage to avow.

"Poor Fridolin!" said I, as I pressed his hand, "I can give you no consolation in this matter. Only time and religion can heal such a wound."

He wiped the tears from his eyes, pressed my hand convulsively, and exclaimed, "Oh! I am made miserable for many years, perhaps for ever! The sudden death of my father, the debts he has left behind him,—hard as all this is, I could bear it with manly courage. Death is the common lot of all men: nobody is immortal here below. The ruin of our fortune would not be a lasting grief for my mother. She does not know that the liberal gratitude of my noble patron will relieve her from all cares for our support. But my poor mother! She writes that she has had domestic troubles during several years. Sad forebodings torment me. Who occasioned these troubles to the good, gentle woman? Alas! and the unhappy Justine! What has become of her? Why was she obliged to leave her home? Why does she renounce me?"

Here he paused and sobbed violently. "Friend," said I, "either she is innocent of the unlucky affair; or —"

"Hush! no or," cried Fridolin. "She is innocent, she is matchless. I have known her from my earliest childhood. We were neighbours, inseparable play-fellows. When I returned from the university, we promised each other fidelity and love, although our fathers were always quarrelling and going to law, and threatened our union with their malediction. Trusting that time might make a favourable change, and placing our hopes upon a kind Providence, I accepted the nobleman's offer to accompany him for some years in his travels: and now that no obstacles forbid our union, now, for some causes yet unknown to me, she renounces me! In the letter I received from her a few weeks before this last terrible one, she entreated me still, with tender solicitation, to return soon to my home. She was always virtuous, faithful, full of courage and resolution, and now she sinks under her misfortunes. Why does she conceal from me the dark secret, which severs us for ever? she never before concealed anything from me. Oh! what has become of the poor girl!"

He spoke in this strain for a long time. I could not restrain my tears while listening to him. The contents of Justine's letter were so mysterious and ambiguous, that all our conjectures were fruitless.

An unexpected accident interrupted our conversation.

## ON ROPES AND ROPE-MAKING.

### I.

#### THE NATURE AND CULTIVATION OF HEMP.

AMONG the many useful forms which fibrous substances may be made to assume, few are more important than that of *cordage*. By this term we imply all the various kinds of rope, string, line, twine, cord, &c., with which every one is so familiar.

The art of twisting into line and ropes various materials, such as thongs of animal hide, the hair of animals, tough grasses, and vegetable fibres, is of remote antiquity, and has existed even among the rudest people. The *tarabita*, or rope-bridge of the Peruvians, and the lasso of the Chilian hunter, are formed by twisting together thongs of ox-hide. In our own country, at the present time, ropes for particular purposes are made of horse-hair. The coir ropes

of Ceylon and the Maldivé Islands are made from the fibrous husk of the cocoa-nut; the Manila rope from the fibres of a species of the wild banana; ropes used by other Eastern nations are made from the fibres of the *Crotalaria juncea*. But of all the various kinds of vegetable fibre employed for this purpose, none are so important as the *Cannabis sativa*, or cultivated hemp, and the *Linum usitatissimum*, or flax. We shall devote the present article to a notice of hemp and its cultivation; the next to a similar notice of flax; and shall then describe the process of manufacturing the fibres thence obtained, into cordage.

The *Cannabis sativa* is a plant having a stem six or eight feet in height, upright, somewhat quadrangular, hairy at the surface. An oil is extracted from the seeds, and the seeds themselves are given to birds as food; but the fibrous substance of which the stem is composed is that which renders the plant most valuable, as a material for ropes. The hemp plant was mentioned by Herodotus as a native of Scythia. According to Linnæus it grows in the East Indies. Thunberg says it is occasionally found in Japan. Gmelin found it in Tartary; and Hennepin met with it among the Illinois, in North America. But wherever the plant was first cultivated, it has become now one of the products of several European countries.

The soil best adapted for hemp crops is of a deep, black, vegetable texture, in a low situation, and somewhat exposed to moisture. But a deep mellow, loamy, or sandy soil will produce good hemp, though rather less in quantity. In preparing the ground, the plough and harrow are much in requisition, to bring it to a fine mellow condition, and to free it from weeds. Where hemp immediately succeeds a corn crop, there are usually three ploughings, and an equal number of harrowings; the first being performed as soon as possible after the preceding crop is removed; the second as early as it can be done in the spring; and the last, immediately before the seed is sown. A large quantity of good manure or compost is added at the time of the last harrowing.

The seed is sown in quantities varying under different circumstances, and in two different manners. Some cultivators adopt the broadcast mode, that is, disperse the seed over the surface of the prepared ground as evenly as possible, and then cover it in by means of light harrowing. Others effect it by drilling, or sowing the seed in parallel drills or shallow trenches. The proper time for sowing is when the danger of early spring frosts is over, for instance, in the month of April; and the sooner it is effected after the commencement of favourable weather the better, as it gives a superior vigour to the early growth, and enables the plant to stand better the subsequent operations. This is a kind of crop which is capable of being grown after most other sorts, and even on land broken up from the state of sward. It has been grown on the same spot of ground for a great number of years, without the intervention of any other crop; indeed this has been the case in some parts of Suffolk for seventy successive years, but with the almost constant use of manure to prevent the exhaustion which would otherwise result. It is necessary, when the seed of the hemp plant has been sown, to use much caution in keeping the birds from the ground, as they otherwise soon devour a large proportion of the seed.

When the seed has once been deposited in the ground, a little attention from the cultivator is all that is necessary; the tall growth and thick shade of the plants, from the nature of the foliage, soon covering the surface, so as to prevent the rising of every sort of field weed.

When the crop has become perfectly ripe, which is known by its assuming a whitish yellow colour, and by the stems beginning to shed their leaves, it is ready to be pulled or taken up. The pulling is effected by forcing the plant up by the roots from the ground in

small portions at a time, with the hand, shaking off the mould from them before the parcels are deposited upon the surface. The business is commonly executed in a little more than three months from the time of putting in the crop. As soon as the labour of pulling is finished, the hemp is tied up into small bundles, or what are commonly termed *barts*.

After this process, the stems are prepared for the separation of the fibres, by an operation called *retting*, of which there are two kinds, *dew-retting* and *water-retting*; both of which are effected more favourably when the weather is rather showery.

In *dew-retting*, the hemp stalks, immediately after being pulled, are spread out in a thin, even, and regular way, so as to keep exact rows on a fine piece of close, old sward land, which is pretty even on the surface, for the space of three, six, or even eight weeks, according to circumstances, being turned as often as may be necessary in the time. In showery seasons, this is mostly done three times a week. As soon as the rind or bark of the hemp plant becomes easily separable from the firm part of the stem, it is taken up from the ground, and tied up into rather large bundles, in order to be carried home and stalked up, or placed in some covered building till it is wanted for being formed into hemp. This process requires great nicety and attention, in order to prevent the texture of the hemp from being deteriorated by too long a continuance on the sward; or by removing it at too early a period, before the hemp substance has been rendered sufficiently separable.

In *water-retting*, which is much more common than the method just described, the hemp, after being wholly taken up, and bound into rather small bundles, by means of bands at each end, is carried to a pond or pit of standing water. It is there deposited, bundle upon bundle; and when it has been piled to such a thickness as the depth of the water will admit, usually about five or six feet, the whole mass, now called a *bed* of hemp, is loaded with large pieces of heavy wood, until it is completely immersed. When it has remained in this state for five or six days, it is taken out and conveyed to a piece of mown grass or other sward land, that is perfectly clean and free from the access of animals. There the bundles are untied, and the hemp stalks are spread out, one by one. While in this state, especially in moist weather, it must be carefully turned every second day. It is continued in this way for five or six weeks; after which it is gathered up, tied in large bundles, and kept perfectly dry in a house or small stack, until wanted for use.

In some parts of Scotland, after the hemp is pulled, and the leaves, seeds, and branches removed by means of an instrument called a *ripple*, it is formed into bundles of twelve handsfull each, and steeped in water for six or eight days. It is known when it has had sufficient steeping by the reed being readily capable of parting from the bark. The most slender hemp stands in need of the greatest amount of steeping. After being taken out of the water, the hemp is not spread out upon grass-ground in the manner spoken of above, but is dried as quickly as possible, by setting it in an inclined position against cords fastened up for the purpose, or in any other way that will afford it the full benefit of the air, until it is completely dry, and the bark blisters up from the reed.

A method was introduced into France some years ago, by M. Brealle, of steeping hemp and loosening the bark in a much shorter time than as commonly practised. The process consists in heating water in a vessel or vat to the temperature of 73° or 74°, Reaumur, and dissolving in it a quantity of green soap, in the proportion of 1 to 48 of the hemp. The quantity of water made use of in this process should be about forty times the weight of the hemp. When the liquid is prepared, the hemp is thrown into it, and made to float on the surface, the

vessel being immediately covered, and the fire put out. In the course of two hours' steeping under these circumstances, the hemp is said to have attained the desired state. The superiority of this method is supposed to consist in a great saving of time and expense, and in the production of a larger quantity of tow from a given amount of hemp: but from this calculation is to be deducted the value of the fuel expended in heating the water. It would appear, that if this speedy method is really found so effective as is stated, it would promote the cultivation of hemp crops, by the facility which it affords to the subsequent processes, even in such situations as are not contiguous to rivers, streams, or ponds, and would also obviate any ill consequences that might originate from the putrid effluvia sent into the atmosphere, and prevent the corruption of the waters which, during the steeping of the hemp, are known to destroy the fish contained in them, as well as to prove hurtful to cattle that drink therefrom.

Among various improvements suggested in the mode of steeping hemp, one by Mr. Rainbeard has been recommended, as a means of effecting it without exposing the persons employed to be wetted. The pond is an old marl-pit, with a regular slope from one side, (where the hemp is prepared,) to the depth of eight feet on the other side. On the slope, above the water, the hemp is built into a square stack, upon a frame of timber of such a height as will float and bear a man without wetting his feet. The frame, with its load of hemp, is slid down into the water, a person on the opposite bank drawing it forward. When the stack floats, the frame is drawn away, and the load of hemp sinks to the bottom; after which another load is lowered in a similar manner.

There are a few details relating to the statistics of the Russian hemp trade, and the cultivation of the hemp plant, in Russia, in our 308th number\*. We shall not enter, therefore, into any further details in this place.

The subsequent processes, by which the fibres are obtained from the stalks of hemp and prepared for the use of the rope-maker, bear so close a resemblance to the analogous processes in the preparation of flax, that one description will be found available for both. We shall therefore, in the next paper, after giving a description of the flax plant and of its cultivation, briefly notice the processes here alluded to, preparatory to a sketch of the operations of rope-making.



HEMP, (*Cannabis sativa*.)

\* See Saturday Magazine, Vol. X., p. 145.

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